

WHAT IS CLAIMED IS:

Patent Claims

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1. Method of generating binary sequences of random numbers based on the principle of random selection of the path of photons on a beam splitter and generating a random number by using two detectors downstream from a beam splitter, where the counting electronic means of the two detectors are wired so that a random number is generated when only one of the detectors responds, characterized in that the photons/photon swarms emitted during a defined measurement time by a photon source designed as a light source (L) of a low power according to the random principle are split by at least two beam splitters (ST1; ST2) arranged one after the other in the beam path of the light source (L) and are detected by downstream detectors (DT; D1₀, D2₁) connected to the detection device (E) in accordance with the split by the beam splitters (ST1, ST2), and a random number is generated only if the photons registered at the individual detectors (DT; D1₀, D2₁) correspond in their totality to a previously defined photon scheme.

2. Method according to Claim 1, characterized in that with two beam splitters (ST1, ST2) arranged one after the other in the beam path of the light source (L), the photon counting scheme on which generation of the random number is based is in turn based on generating a random number only when no photon is registered at the trigger detector (DT) of the first beam splitter (ST1) during the predefined measurement period and at least one photon is registered at only one of the detectors (D1₀) or (D2₁) downstream from the second beam splitter (ST2).

3. Method according to Claim 1, characterized in that with two beam splitters (ST1, ST2) arranged one after the other in the beam path of the light source, the photon counting scheme on which the generation of the random number is based is in turn based on generating a random number only when at least one photon is registered on the detector (DT) of the first beam splitter (ST1) during the predefined measurement time and at least one photon is registered at only one of the two detectors (D1₀) and

(D2₁) downstream from the second beam splitter (ST2).

4. Method according to Claim 1, characterized in that for the case when more than two trigger beam splitters are arranged in the beam path between the light source (L) and the beam splitter (ST2), the photon scheme is designed mathematically so that a random number is generated only when a photon swarm with a number of photons defined by the predefined photon scheme appears at the detectors of the beam splitter (ST2) and the trigger detectors of the additional trigger beam splitters.

5. Arrangement for generating binary sequences of random numbers, including

- a light source designed as a photon source,
- a beam splitter downstream from the light source and having two detectors downstream from the beam splitter, and
- a detection device downstream from the detectors, including counters and computer, for generating the random numbers,

characterized in that a light source (L) of a low power is used as the photon source from which both individual photons as well as photon swarms can be emitted according to the random principle, and at least one additional beam splitter, preferably a trigger beam splitter (ST1), is arranged in the beam path between the light source (L) and the beam splitter (ST2) arranged in the beam path of the light source (L), the additional beam splitter being connected by a detector, preferably a trigger detector (DT), to the detection device (E).

6. Arrangement according to Claim 5, characterized in that an attenuated laser is used as light source (L).

7. Arrangement according to Claim 5, characterized in that a thermal light source is used as light source (L).

8. Arrangement according to Claim 5, characterized in that an spectral lamp is used as

light source (L).

9. Arrangement according to Claim 5, characterized in that a light emitting diode is used as light source (L).

10. Arrangement according to Claim 4, characterized in that a pinched light source is used as light source (L).

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